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**CHALLENGES AND PROSPECTS OF USING INFORMATION AND
COMMUNICATION TECHNOLOGIES (ICT) IN INSTRUCTIONAL DELIVERY IN
CROSS RIVER STATE SECONDARY SCHOOLS.**

By

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ABSTRACT

Nigeria, like many other developing countries of the world had considered education as the panacea to her developmental objectives, believing fully that no country has ever grown above the quality of education available to her citizens. This paper examines the national and state policies on ICT, strategies for utilization of ICT, and challenges of ICT in the teaching-learning process in secondary schools in Cross River State. The research reviewed previous and related studies associated with ICT. The challenges of implementation of ICT are numerous such as lack of infrastructure, policy, legal and regulatory framework, internet and broadband, capacity building, public private partnership etc. the prospects for implementation also formed part of the review. It was concluded that as a means of developing capacity for a self-discovery learning and instruction. It was therefore recommended that education policy planners should include ICT education into Cross River State public secondary schools' curriculum and provide measures of achieving it.

Keywords: ICTs, Secondary- Education, Nigerian ICT Policy, Cross River State ICT Policy

INTRODUCTION

Information and communication technologies (ICT) has become the wave of the moment in global socio-economic affairs. It has become so important than ever in a country, organization, or institution no matter how highly or lowly placed wants to identify and embrace it. The world presently is knowledge-driven and information age has taken the center stage in virtually everything. Utilization of ICT facilities is therefore a sine qua non for qualitative instructional service delivery in secondary schools (Onu & Ezhim, 2019).

(Mangal and Mangal, 2004 as cited in Johnson, et al 2021) defines ICT as computer-based tools used by people to work with the information and communication processing needs of an organization. It encompasses the computer hardware and software, the network, and several other devices (video, audio, photography, camera, etc.) that convert information (text, images, sound, motion) into common digital form. ICT has a wider spectrum of applications with enormous relevance to secondary school teaching and learning activities. ICT utilization is the presentation and distribution of instructional content through web environment (e-teaching) or systems offering an integrated range of tools (stand-alone computer instruction) CD-Rom amongst others, to support learning and communication (Akuegwu, et al, 2011).

Instructional service delivery involves teaching/learning activities that take place in the classroom. Therefore, the quality of instructional service delivery entails the extent of effectiveness to which teachers carry their classroom teaching/learning process. Inyang-Abia (2015) describes ICTs as the various sets of technological tools and resources designed for creating, communicating, disseminating, storing, and managing information. As technologies, ICTs provide access to information through telecommunications. Although ICTs derive from and are sometimes equated with Information Technologies (ITs), they emphasize the internet, the wireless networks, and the digital instruction through the social media and personal devices such as laptops, cell phones, the Ipads, Ipods, and other mobile communication gadgets.

The awareness of ICT in education started gathering momentum in secondary schools in Cross River State in 2007 at the inception of Senator Liyel Imoke administration as the Governor of Cross River State. According to Cross River State Education Standard, the education sector was tottering at the precipice of near total collapse. A lot had obviously gone wrong with this invaluable sector following prolonged periods of utter neglect and abandonment. But consistent innovations and remodeling efforts injected into the sector these past years have not just breathed new life into it but, significantly ensured an enduring turn around. Conscious of the critical role education plays as a catalyst for economic transformation and socio-political advancement, the focus was placed on repositioning the sector. From the basic formative level, which is the primary, through the secondary stages up to the tertiary levels, comprehensive, rather than isolated transformation process was adopted through the institution of a three-prong approach to rejuvenate this but all-important sectors.

The first stage was to assess the level of decay and adopt strategies towards combating the identified problems. An assessment process named "Needs Assessment", was instituted and 75% of the schools across the state: primary, secondary, and tertiary, were visited and monitored for six months to collate data and information on the situation and the required measures to bring each school back to life. After a careful analysis of the report, a three-prong approach was adopted in tackling the myriad of problems in the sector: Infrastructural development, capacity building and discipline. These led to the conceptualization of a standard peculiar to the state where every school must have modern edifice, with standard equipment. At the secondary school level, each school, apart from the modern edifice and standard classrooms, must have a fully stocked library, equipped laboratory for ICT and functional laboratory for each of the three major science subjects: Chemistry, Biology and Physics.

Conscientiously, the infrastructure in schools such as the buildings, desks, instructional and learning facilities such as laboratories, libraries which were near absent in most schools were rehabilitated or installed. On capacity building, training, and retraining was adopted

with every teacher in the state school system made to benefit from one form of training or the other through workshops and seminars. Teachers without the prerequisite teaching qualifications were mandated to acquire same as the Nigeria Certificate in Education (NCE) became the minimum standard for teaching in primary schools while first degree became the minimum for teaching in secondary schools. On discipline, several disciplinary measures were adopted beginning from the local government level through zones up to the State Ministry of Education.

The provision of a full complement of these model facilities in some secondary schools was consciously spread across the state, both in rural and urban areas. This is a conscious policy to ensure that students whether in rural or urban centers have access to the same learning facilities and atmosphere for optimal knowledge acquisition alongside having the fields and playgrounds to create the right ambience for extracurricular activities. This is to ensure that they can at any time hold their own or compete favourably anywhere they find themselves since the world has become a global village. The concept is for a child, whether in the northern fringes of the state or in Calabar Metropolis to be able to stand shoulder to shoulder with their counterparts in countries like Malaysia or Brazil by being exposed to the same learning environment and appropriate knowledge. In recognition of the fact that Brazil, which some few decades past was seen as a developing nation has through the use of e-learning educational system developed its technology and infrastructure, the state sought to pattern its educational system along that line by adopting e-learning.

To make the e-learning a conscious imperative in every child that passes through the school system in the state to acquire the necessary skills to be able to adapt to technology driven concepts and environment, each school was ear-marked for an e-learning laboratory' fully equipped with computers, internet facilities and every teacher in the state provided with a laptop. To keep this equipment functional, efforts were made to imbibe the teachers with the appropriate skills so that they could teach the students, the state went into

partnership with a private company, Educom India to train the teachers on computer skills acquisition and maintenance. With the adoption of e-learning in secondary schools by Liyel's government, Cross River State became one of the first that is approaching e-learning in a holistic manner.

The whole idea and essence were to ensure that a child that passes through secondary school in Cross River State should have acquired basic computer skills. To achieve this fit, 10,000 teachers were given computers in conjunction with EcoBank in the first phase of distribution. Also, these teachers were trained to acquire basic computer literacy and skills to enable them function adequately with the computer.

NATIONAL POLICY ON UTILIZATION OF ICT

(a) National Policy on ICT

Over the years, the Federal Government of Nigeria has initiated and adopted several ICT related policies and laws aimed at guiding the development of the sector and harnessing its power for national development (National ICT Policy, 2012). But, Nigeria, like other nations, faces the inevitability of the fast technological and market convergence of the global ICT industry and must therefore continue to evolve new ICT policy frameworks to accommodate convergence and maximize the potential of ICT tools for national development.

The goal of this National ICT policy therefore is to provide a framework for streamlining the ICT sector and enhancing its ability to help address some socio-economic and develop challenges while facilitating the transformation of Nigeria into a knowledge-based economy. In addition, the ICT policy shall be used to develop action plans, sub-sectoral policies, and specific implementation guidelines as appropriate. The Policy and Regulatory Framework:

Currently, the Nigerian ICT sector is guided by the following policies and enabling laws:

- The National Telecommunications Policy (NTP) 2000

- National Mass Communication Policy
- National Broadcasting Commission (NBC) Act 1992 (as amended)
- Nigerian Communications Act, 2003
- Nigerian Postal Service Act 2004 Cap 127 Laws of the Federation of Nigeria
- National Information Technology Policy 2000:
- National Information Technology Development Agency (NITDA) Act 2007; and
- The Wireless Telegraphy Act, Laws of the Federation 1999.

ICT Nigerian Vision 20:20:20

The long-term strategic vision for the ICT sector was elaborated in the National Development Plan titled "Nigeria Vision 20:2020". According to the document,

The increasing globalization driven by ICT makes it imperative for Nigeria as an emerging market to irreversibly consider the application and promotion of ICT strategy to facilitate its rapid growth and development. This will involve the development of a vibrant ICT sector to derive and expand the national production frontiers in agriculture, manufacturing, and service sectors. It would also require the application of the new knowledge to drive other soft sectors: education, governance, entertainments public services, media sector, tourism etc. (National ICT Policy, 2012).

The vision 20:20:20 document further acknowledges the following: In respect of knowledge and digital divide, the situation remains worrisome. This is, in terms of knowledge generation, penetration of ICT, access to and usage of internet and telephone penetration (fixed and mobile) and physical infrastructure. The knowledge and digital divide cuts across geographical, gender and cultural dimensions. It exists among the 36 states of the Federation, plus the Federal Capital Territory, the 774 Local Governments, rural and urban areas, men and women, rich and poor, young and old, able bodied and disabled, illiterate and educated (National ICT Policy, 2012).

This National ICT Policy has been developed in support of the developmental goals of Nigeria's vision 20:20:20.

Vision and Mission Statement on ICT

The vision and mission statement on ICT as adopted by National ICT Policy are presented below:

Vision:

Nigeria as a knowledge-based, and globally competitive society.

Mission:

To fully integrate information and communications technologies into the socio-economic development and transformation of Nigeria into a knowledge-based economy,

(a) Status of Information and Communications Technologies (ICTs) in Nigeria

On 25 August 2011, the then Honourable Minister for Communications Technology, Mrs. Omobola Johnson, inaugurated the National Ad hoc Committee on ICT policy. The committee's only Term of Reference was to harmonize all existing policies in the ICT sector into a single ICT policy document within six weeks. On 22 May 2012, a 16-man Finalization Committee headed by Prof. Raymond Akwule was inaugurated and in the following month (June 2012), the final report was submitted.

The Mission Statement of the National ICT policy of the Federal Republic of Nigeria (2012) emphasizes the urgent need to use ICTs to achieve the national goals in the following five critical areas of national economy that significantly reflected her ethos:

- i. Education
- ii. Creation of wealth
- iii. Poverty eradication
- iv. Job creation; and
- v. Global competitiveness.

The main objective of the National ICT policy is to create a conducive environment for rapid expansion of ICT networks and services that are accessible to all at reasonable costs and that contribute to the development of the various economic sectors (FRN 2012).

Based on the above Mission Statement, the policy outlined the following general objectives of ICT:

- To ensure that information technology resources are readily available to promote efficient national development.
- To guarantee that the country benefits maximally, and contributes meaningfully by providing the global solutions to the challenges of the Information Age
- To empower Nigerians to participate in software and IT development: encourage local production and manufacture of IT components in a competitive manner:
- To establish and develop IT infrastructure and maximize its use nationwide.
- To promote tourism and Nigerian arts and culture.
- To empower the youth with IT skills and prepare them for global competitiveness.
- To bring all ICT related activities under a single Ministry so as to give policy guidance to the converged industry.
- To enact a new information and communication technology (ICT) Act that ensures a competitive and converged industry as well as provides an appropriate legal framework.
- To integrate IT into the mainstream of education and training etc.

(b) State Policy on ICT in Education

According to Cross River State ICT Policy Document (2010), the Cross River state policy on ICT is guided by two basic statements, that is the vision and the mission statements respectively. The vision statement stated that: "To become the leading ICT driven state in the nation and create a local information society and knowledge economy", While the mission statement has it that; "To support and empower the transformation of the government, people and economy of Cross River State by the proactive application of technology to enable the state to become a leading state in the nation by the year 2020.

Based on the above statements, the Cross River State government formulated some

specific policy objectives which are aligned to seven sectors of emphasis in the economic blueprint of the administration of the state, these sectors are: Agriculture, Tourism, Education, Human Resource Development, Health, Business and Investment and Environment. For the purpose of this paper, the discussion shall be limited to ICT Policy on Education.

Thus, ICTs will be used to expand access to affordable, qualitative education to provide the requisite skills for developing and driving Cross River State's information economy and society with emphasis on its youthful population.

- Facilitate the use of ICTs within the educational eco-system to improve on educational access and delivery to support teaching and learning from primary school upwards.
- Apply ICTs to enhance curriculum development, teaching methodologies, simulation laboratories, lifelong learning, distance education for all subjects and specializations.
- Raise the awareness of the potential of and adopt ICTs as the platform for learning in educational institutions across the state.
- Make digital literacy compulsory for all teaching and administrative staff of educational organizations in the state.
- Develop educational management information systems to improve the administration and management of the educational sector.
- Update curricula at all levels and bring in line with demands of the modern information society.
- Facilitate the provision of internet access to all educational institutions at all levels.

Facilitate the development of and participation in stakeholder networks that promote information exchange, collaboration, and learning. Considering the above policies on ICT, the National ICT Policy and the Cross River State ICT policy document have the same

vision and mission. Therefore, the effective integration of ICT into the secondary school educational system in Cross River State can only be realized by collaborative efforts of both the federal and state governments.

This paper intends to present the under-mentioned strategies in order to tackle the identified challenges as follows:

STRATEGIES FOR UTILIZATION AND LEARNING THROUGH ICT IN CROSS RIVER STATE

To realize the government, set goals and objectives on the utilization of ICT in secondary schools, the following strategies are adopted to:

- To facilitate the provision of ICT equipment, training, content, and support systems to educational institutions in a sustainable and effective manner.
- Utilize the College of Education as a "factory" for the production of knowledge teacher prepared to lead pupils and students into the information age.
- Articulate a policy for mainstreaming ICTs into all institutions in the state, linking with Federal Government (FG) initiatives, resolve technical challenges and facilitate the use of technology in educational institutions in Cross River State (CRS).
- To set up partnership with the Departments of Computer Science and Electronic Engineering in Cross River University of Technology (CRUTECH). Ensure continued relevance of curriculum, facilitate sister partnerships with overseas institutions, provide internship research and consultancy opportunities to students and lecturers with Government and Investors.
- Merge the traditional public libraries system into a network of electronic libraries and make content available across all institutions in the state.
- Facilitate the teaching of and a culture of software development from junior secondary level and the creation of software development clubs, competitions, and networks through secondary and tertiary educational institutions (Cross River State ICT Document, 2010).

CHALLENGES OF USING ICT IN CROSS RIVER STATE

The development and deployment of ICTs have brought about phenomenal improvements and great opportunities for developing states and countries to participate meaningfully in the global digital economy. Therefore, the need for Cross River State to harness existing ICT tools to enhance sustainable socio-economic development cannot be overemphasized. It must however be noted that numerous challenges which include lack of a comprehensive and harmonized ICT policy, inadequate infrastructure, legal and regulatory framework, universal access/service, security, and local content etc. must be addressed for the state and country to meaningfully participate in the information ages (National ICT Policy. 2012).

According to Cross River State Information and Communication Technology Policy Document, the undermentioned are some of the challenges:

1. Policy, legal and regulatory framework:

Presently in Nigeria and Cross River State respectively, policies guiding the ICT sector are treated under various legislations. These laws are however not comprehensive enough to deal with convergence and other ICT related issues in the current digital world. There is therefore an urgent need for the country to have a single comprehensive ICT policy to address the following:

- i. Appropriate policies, legal, regulatory, and institutional frameworks, including a converged ICT regulatory agency.
- ii. Affordable and reliable access to ICT.
- iii. Investment in ICT.
- iv. Research and Development (R & D) in ICT.
- v. Legislations on the following:
 - Cyber-crimes,
 - Ethical and moral conduct,
 - Privacy,
 - Copyrights,

- Intellectual property rights.
 - Piracy; and
 - E-transactions.
- vi. Competition and public-private partnership; and
- vii. Institutional framework for ICT policy development, Monitoring, and review.

2. ICT infrastructure:

The paucity of ICT infrastructure in the state has greatly hindered the provision of efficient and affordable ICT services to the people. So, the state in conjunction with the Federal Ministry of Communication Technology should therefore focus on the development of the following:

- i. National ICT backbone and broadband infrastructure.
- ii. Infrastructure that will foster digital literacy and internet usage.
- iii. Affordable Universal Access to ICT and
- iv. National physical infrastructure (including power).

3. Internet and Broadband:

Internet and Broadband have been globally acknowledged as the foundation for transformation to the knowledge economy. Broadband has the potential of enabling entire new industries and changing how we educate our children, deliver health care, manage energy, ensure public safety, engage government and access, organize, and disseminate knowledge. The government should endeavour to deploy broadband in Cross River State. This is necessary for the actualization of the developmental goals of vision 20:20:20.

4. Capacity Building:

Despite the proliferation of ICT training institution in the state, proficiency in ICT is still very low among the populace. Therefore, the importance of strengthening ICT human capital development should be accorded the necessary priority. Attention should be given to developing globally competitive indigenous human capital and

knowledge-based products and services in targeted areas of ICT (software, hardware, networks, card technologies, security /biometrics, web, and digital content development, etc.). Accordingly, the following issues must be adequately addressed:

1. Development of appropriate ICT curricula for all levels of educational institutions (primary, secondary, and tertiary).
2. Promotion of digital literacy and provision of appropriate digital literacy guidelines and standards for the informal sector, non-literate population, and special groups.
3. Provision of training programs for public servants and employees in the private sector:
4. Establishment of information resource centres and strategies for research, development, and innovation; and
5. Provision of, and recognition for, non-formal and distance e-learning modes of education.

5. Public Private Partnerships (PPP):

Private sector participation has been identified as a major catalyst in ICT development across the globe. However, Cross River State is yet to take full advantage of the enormous potentials inherent in public-private-partnership in ICT development. The necessary enabling environment should therefore be created for the realization of this benefit.

6. Youth and ICT:

In recognition of the peculiar roles of the youth in sustainable national development, appropriate measures should be put in place to empower and engage them through initiatives that facilitate access to affordable ICT infrastructures.

7. Local Content Development:

ICT local content (including software and hardware) is grossly underdeveloped in Cross River State and Nigeria respectively. This has resulted in over-dependence on the foreign importation of software and hardware and diminished opportunity for capacity building in

ICT content creation. Consequently, to remedy this challenge, efforts must be put in place to ensure that local content which includes production of local software and hardware is properly developed through appropriate local content laws; content development in indigenous languages; and encouragement of the industry to focus on solutions and services that meet the needs of the society.

8. Security:

Major challenges facing the country in the era of ICT development include cybercrime. Fighting cybercrime requires appropriate legislation and a high degree of coordination between ICT related agencies and security organizations. The lack of appropriate legislation and coordination of the activities of various security arms of government are issues that should be addressed.

9. Universal Access:

Over 70% of Nigerians reside in the rural areas and most do not have access to advanced ICT services. In addition, some Nigerians reside in urban areas that are unserved or underserved. Consequently, efforts should be made to ensure universal access and quality service through the nationwide development of ICT infrastructure and services, especially broadband internet access and related facilities and applications. Some issues to be considered include: development of national fibre-optic backbone infrastructure that ensures high bandwidth availability, universal access funding and programmes, internet connectivity and telecommunications access network extensions; encouragement of private operators to rollout nationwide high speed broadband and data infrastructure; and use of appropriate and existing government structures (e.g Post Offices, Schools, Libraries) as platforms for extending ICT to rural communities. All ICT industry participants should contribute toward supporting development of universal access.

10. Multiple Regulation:

This refers to a phenomenon where players in the ICT sector are subjected to various rules

and regulations from different agencies of Government (Federal, State or Local). This tends to discourage investments and deprive the sector of the necessary funding for improvement and expansion and should be discouraged.

PROSPECTS OF ICT UTILIZATION IN CROSS RIVER STATE SECONDARY SCHOOLS

Generally, the prospects of utilization of ICT in Nigerian secondary schools according to Adomi and Anie (2006), is to improve secondary education which is essential to the creation of effective human capital in any country. The need for ICT in Cross River State secondary schools cannot be overemphasized. In this technology-driven age, everyone requires ICT competence to survive. According to Damkor, et al (2015) organizations are finding it very necessary to train and re-train their employees to establish or increase their knowledge of computer and other ICT facilities. These calls for early acquisition of ICT skills by students and the ability to use computers effectively has become an essential part of everyone's education (Ben & Ashang, 2013), skills such as bookkeeping, clerical, and administrative work, stocktaking, and so forth. The demand for computer/ICT literacy is increasing in Cross River State in particular, and Nigeria in general, because employees realized that computers and other ICT facilities can enhance efficiency. On the other hand, employees have also realized that computer can be a threat to their jobs, and the only way to enhance job security is to become computer literate.

With the high demand for computer literacy, the teaching and learning of these skills is a concern among professionals. This is also true of other ICT components. New instructional techniques that use ICTs provide a different modality of instruments. For the students, ICT use allows for increased individualization of learning (Johnson, et al 2021). In schools where new technologies like power point, multi-media electronics, digital camera, slides, DVD etc. are used, students have access to tools that adjust to their attention span and provide valuable and immediate feedback for literacy enhancement, which is currently not fully implemented in the

Nigerian school system. ICT application will prove beneficial in improving the educational system in Cross River State and giving students a better education. According to Ejiroghene (2021) a technologically advanced workforce will lead to ICT growth in Nigeria, with the potential to improve military technology and telecommunications, media communications, and skilled ICT professionals who will be well-equipped to solve IT problems in Nigeria and other parts of the world.

Prospects of ICT-assisted education include enhancing the quality of teaching and learning of the subject; sharing of information and resources by many learners at the same time and providing individual learning opportunity; concretizing learning experiences is made available by audio and visual presentations in ICT based teaching. This provides enabling environment for effective teaching of abstract and difficult topics and concepts (Ekpoto, et al, 2022). Social studies students can receive instructions on many topics from different experts from any part of the world. ICT-based learning is self-motivating, enhancing learner's creativity, participation, and academic excellence Imoke, et al (2021).

The foregoing outlines the prospects of ICT-based educational programme in social studies and any other secondary school subject. But its application in Cross River State (CRS) school system are problems which include finance to provide the needed infrastructure, lack of ICT-trained staff, lack of internet services in villages and towns outside the main cities, lack of networking of personal and institutional computers and the most critical problem is lack of steady supply of electricity.

Conclusion

ICT has very great prospects for the improvement of education in Cross River State. It is a means of developing capacity for a self-discovered modeled learning and instruction. It is thus a means of making the job of the teacher easier. However, to explore these great potentials, a change in attitude of policy implementers, teachers and learners is of paramount

importance as provision of an enabling environment is a sure way of making ICT thrive.

Some of the learning strategies that could be incorporated in a comprehensive approach include self-directed teaching, co-operative learning, role playing, behavioural rehearsal, peer education and parent involvement. Consideration should be given to allowing students to plan some learning experiences. They could be provided with opportunities to identify topics or areas for further study, contribute information relevant to an issue for study and/or make suggestion for follow-up activities and this result in an avenue to employing the application of Information and Communication Technology (ICT).

Recommendations

It is worthy to note that successful use of ICT as stimulant to secondary school education depends to a large extent, on the supportive policy of the three tiers of government. Therefore, the following recommendations are made to promote and improve the development of ICT education in Cross River State public secondary schools:

1. Computer equipment and peripherals are generally capital intensive, therefore philanthropists, organized private sector and even the informal sector must be enlightened in the need for computer education so that they can contribute generously to finance the installation of systems in public primary and secondary schools.
2. That every local government should endeavour to build a computer center where systems peripherals and software are installed for the use of students and teachers.
3. Restructuring of the educational broadcast industry with a view to making it an essential and mandatory part of every teacher education effort should be undertaken.
4. Wireless technology requiring limited electricity or perhaps none of all in all rural areas should be an option to consider.
5. The use of internet technology with special attention to communications dimension

of computer technology should be developed to encourage sharing of materials and information within the country and easy retrieval of information.

6. Teachers in secondary schools should be armed with appropriate and requisite skills in ICT. This will enable them to impart ICT skills on the students and especially help in trouble-shooting ICT related problems.
7. Power supply in the country is epileptic. ICT operations require constant electricity for its maximum use. Therefore, power supply should be massively increased, improved and worked upon through public private partnership (PPP) so as to enhance the use of ICT in secondary schools.

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